

# Believing is seeing

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## SUMMARY

Do you believe in your memories? Almost everyone would say yes. Do you act according to your memories? Most people would say yes (e.g., people having a memory of bad service in a restaurant will probably not visit that restaurant again). Do you have memories that you no longer believe? About one in five respondents would say yes. Do you act according to your nonbelieved memories? The answer here is largely unknown. The phenomenon of nonbelieved memories has raised a theoretical issue about the constructs of memory. Recent research has found that memory has two dimensions, namely *belief* in the occurrence of a past experience and mental *recollection* of the experience. What we know already is that memories accompanied with beliefs impact people's behavior. What we do not know is which component of memory, belief or recollection, largely guides our behavior. The current dissertation aimed to answer this question.

This dissertation first reviewed consequences of memories in real life and studied the consequences of memories in the lab. **Chapter 2** reviewed cases in China and research on false memories showing that false memories of eyewitness might have serious legal consequences in that innocent people might be convicted. **Chapter 3** examined consequences of true and false memories in a lab-based perceptual task. It was found that memories of presentation of pictures and words made identification of related pictures more quickly.

Having established that memories indeed affect people's behavior, Part II of this dissertation investigated whether it was belief or recollection of past experiences that impacts behavior. Belief refers to whether people believe an event occurred or not. Recollection refers to mentally re-perceiving an event accompanied with sensory details. One may behave merely because of a belief (e.g., believing one had been allergic to peanuts as a child) or because of a recollection (e.g., vividly remembering one's allergic reactions to peanuts as a child), or both may be important in determining behavior. **Chapter 4** studied the priming effect of belief versus recollection on problem solving. Memories of words are found to facilitate problem solving performance on word puzzles, but it was unknown whether this facilitation was due to recollection or belief. The results showed that when beliefs for word memories were undermined, previously seeing the words no longer facilitated solving puzzles, suggesting the important role of belief in influencing behavior.

Memories are also found to impact decision making. **Chapter 5** tried to reduce people's beliefs in memories to see whether it would impact decision making to gain money. Participants first learned memory associations such as an arm picture always paired with a blue circle. Later they learned that the blue circle could win them money. Normally participants would choose the arm picture to win money as well since it was associated with the rewarded blue circle. However, it was found that when people were told that their memory associations were wrong (i.e., the arm picture did not pair with the blue circle), people no longer believed in their memory associations and they no longer chose pictures that were associated with rewarded circles to win money.

**Chapter 6** examined which component of memory drove people's food preferences. Participants were falsely suggested that they had been sick after eating egg salad in childhood and they were guided to imagine this event. Some participants developed vivid recollections of being sick after eating egg salad, while some did not form recollections but believed it happened. The purpose was to see if only belief or recollection was sufficient to change people's preferences over egg salad. The results found that belief, but not recollection regarding the food aversive event, determined people's preferences for egg salad. Taken together, we found a *belief effect*: relative to recollection, belief is more critical in impacting people's behavior.

In Part III, the dissertation explored potential mechanisms of memory to explain the belief effect. **Chapter 7**'s results support the spreading activation theory that memory is a network consisting of nodes (e.g., *egg salad*, *sickness*) and associations among the nodes (e.g., *egg salad* led to *sickness*). Activation of one node such as *egg salad* will spread to nearby related nodes such as *sickness* and impact related behavior such as preference for egg salad. Combining all the results, I propose that belief acts as a reality monitoring mechanism that monitors the associations in the memory network, thus it monitors the direction of spreading activation in the end. As a result, change of belief greatly changes behavior.

In this dissertation, it was found that once people believed that they had been sick after eating egg salad, they behaved as if they truly experienced the food event. Or once people believed that a word was not presented or an association did not exist, they behaved as if they truly did not experience these events. I conclude that "believing" is like "seeing" in terms of impacting people's behavior.